

Appl. No.: 10/695,900
In re Stuart, E. et al.
Reply to Office Action of May 23, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for verifying a predetermined bearing preload of differential bearings in a differential assembly module during the mounting thereof to an axle support beam member of a drive axle assembly, said axle support beam member having a central section and at least two mounting studs outwardly extending therefrom, said differential assembly module including a differential carrier frame member having two axially spaced bearing hub portions each provided for receiving one of said differential bearings for rotatably supporting a differential case, each of said bearing hub portions of said differential carrier frame member having at least one mounting bore for receiving one of said at least two mounting studs of said support beam member, an the axial spacing between said at least two mounting studs being complementary to a the spacing between said mounting bores in said bearing hub portions when said differential bearings are properly preloaded to said predetermined bearing preload, said method comprising the steps of:

- a) providing said differential carrier frame member;
- b) mounting one of said differential bearings to each of said bearing hub portions of

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said differential carrier frame member and a differential case rotatably supported by said differential bearings;

- c) preloading each of said differential bearings to said predetermined bearing preload;
- d) providing said support beam member;
- e) inserting said mounting studs of said axle support beam member into said mounting bores in said bearing hub portions of said differential carrier frame member; and
- f) determining that said differential bearings are properly preloaded if said mounting studs are complementary to said mounting bores in said bearing hub portions ~~received in said mounting bores in said differential carrier frame member without substantial resistance~~; or
- g) determining that said differential bearings are not properly preloaded if said mounting studs are not complementary to said mounting bores in said bearing hub portions ~~may not be received in said mounting bores in said differential carrier frame member or if said mounting studs are received in said mounting bores in said differential carrier frame member with substantial resistance.~~

Claim 2 (previously presented): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, wherein said at least two mounting studs extend substantially orthogonally to a rear mounting surface of said central section of said support beam member.

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Claim 3 (previously presented): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, further including the step of fastening said differential carrier frame member to said central section by threaded nuts complementary to said at least two mounting studs subsequent to the step of determining that said differential bearings are properly preloaded.

4 (previously presented): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, wherein said central section of said support beam member has an opening therethrough and substantially flat front and rear mounting surfaces, and wherein said at least two mounting studs outwardly extend from said rear mounting surface of said central plate section of said support beam member.

5 (previously presented): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, wherein said axle support beam member has two pairs of said mounting studs outwardly extending from said central section of said axle support beam member, and wherein each of said bearing hub portions of said differential carrier frame member has one pair of said mounting bores.

6 (currently amended): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 3, wherein said central section of said support

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beam member has an opening therethrough, wherein said differential carrier frame member further includes a neck portion for rotatably supporting a drive pinion and two opposite leg portions each provided with one of said bearing hub portions, and wherein said differential carrier frame member of said differential assembly module is fastened to said a rear mounting surface of said central section of said support beam member so that said neck portion of said differential carrier frame member extends through said opening in said support beam member.

7 (original): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, wherein each of said bearing hub portions of said differential carrier frame member is provided with a mounting flange portion provided with said at least one mounting bore.

8 (previously presented): The method for verifying said predetermined bearing preload of said differential bearings as defined in claim 1, further including the step of adjusting said differential bearing preload subsequent to the step of determining that said differential bearings are not properly preloaded.

9 (currently amended): A method for verifying a predetermined bearing preload of differential bearings in a differential assembly module during the mounting thereof to an axle support beam member of a drive axle assembly; said axle support beam member including a

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central section having an opening therethrough, substantially flat front and rear mounting surfaces and two pairs of mounting studs extending substantially orthogonally outwardly from said rear mounting surface of said central plate section of said support beam member; said differential assembly module including a differential carrier frame member having a neck portion and two bearing hub portions for receiving said differential bearings for rotatably supporting a differential case and having axially spaced mounting flange portions; each of said mounting flange portions having a pair of mounting bores for receiving one of said two pairs of mounting studs of said support beam member; an axial spacing between said two pairs of mounting studs is complementary to the spacing between said pairs of mounting bores in said bearing hub portions when said differential bearings are properly preloaded to said predetermined bearing preload, said method comprising the steps of:

- a) providing said differential carrier frame member;
- b) mounting one of said differential bearings to each of said bearing hub portions of said differential carrier frame member and said differential case rotatably supported by said differential bearings;
- c) preloading each of said differential bearings to said predetermined bearing preload in accordance with the manufacturer's specification;
- d) providing said support beam member;
- e) inserting said mounting studs into said mounting bores in said bearing hub portions of said differential carrier frame member; and

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f) fastening said differential carrier frame member to said central ~~plate~~ section by threaded nuts complementary to said mounting studs if said mounting studs are complementary to said mounting bores in said bearing hub portions ~~received in said mounting bores in said differential carrier frame member without substantial resistance~~; or

g) adjusting said differential bearing preload if said mounting studs are not complementary to said mounting bores in said bearing hub portions ~~may not be received in said mounting bores in said differential carrier frame member or if said mounting studs are received in said mounting bores in said differential carrier frame member with substantial resistance~~; and

h) fastening said differential carrier frame member to said central ~~plate~~ section by said threaded nuts if said mounting studs are complementary to said mounting bores in said bearing hub portions ~~received in said mounting bores in said differential carrier frame member without substantial resistance~~ subsequent to the step of adjusting said differential bearing preload.

Claim 10 (currently amended): A method for assembling a drive axle assembly of a motor vehicle, said drive axle assembly comprising a support beam member and a differential assembly module, said method comprising the steps of:

a) providing said support beam member having a central section and at least two mounting studs outwardly extending therefrom;

b) providing said differential assembly module including a differential carrier frame member having two axially spaced bearing hub portions each provided for receiving one of differential bearings for rotatably supporting a differential case, each of said bearing hub portions of said differential carrier frame member having at least one mounting bore for receiving one of said at least two mounting studs of said support beam member, wherein an axial spacing between said at least two mounting studs is complementary to a the spacing between said mounting bores in said bearing hub portions when said differential bearings are properly preloaded to a predetermined bearing preload;

c) mounting one of said differential bearings to each of said bearing hub portions of said differential carrier frame member and said differential case rotatably supported by said differential bearings;

d) preloading each of said differential bearings to said predetermined bearing preload;

e) inserting said mounting studs into said mounting bores in said bearing hub portions of said differential carrier frame member;

f) determining that said differential bearings are properly preloaded if said mounting studs are complementary to said mounting bores in said bearing hub portions ~~received in said mounting bores in said differential carrier frame member without substantial resistance~~; or

g) determining that said differential bearings are not properly preloaded if said mounting studs are not complementary to said mounting bores in said bearing hub portions ~~may not be received in said mounting bores in said differential carrier frame member or if said~~

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~~mounting studs are received in said mounting bores in said differential carrier frame member
with substantial resistance; and~~

h) fastening said differential carrier frame member to said central plate section by threaded nuts complementary to said at least two mounting studs subsequent to the step of determining that said differential bearings are properly preloaded.

Claim 11 (previously presented): The method for assembling said drive axle assembly as defined in claim 10, wherein said central section has substantially flat front and rear mounting surfaces, and wherein said at least two mounting studs extend from said rear mounting surface.

Claim 12 (previously presented): The method for assembling said drive axle assembly as defined in claim 11, further including the step of securing a front cover to said front mounting surface of said central section of said support beam member.

Claim 13 (previously presented): The method for assembling said drive axle assembly as defined in claim 11, further including the step of securing a rear cover to said rear mounting surface of said central section of said support beam member.

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Claim 14 (currently amended): The method for assembling said drive axle assembly as defined in claim 11, wherein said central plate section of said support beam member has an opening therethrough, wherein said differential carrier frame member further includes a neck portion for rotatably supporting a drive pinion and two opposite leg portions each provided with one of said bearing hub portions for rotatably supporting said differential case, and wherein said differential carrier frame member of said differential assembly module is fastened to said rear mounting surface of said central section of said support beam member so that said neck portion of said differential carrier frame member extends through said opening in said support beam member.

Claim 15 (original): The method for assembling said drive axle assembly as defined in claim 10, wherein each of said bearing hub portions of said differential carrier frame member is provided with a mounting flange portion provided with said at least one mounting bore.

Claim 16 (previously presented): The method for assembling said drive axle assembly as defined in claim 10, further including the step of adjusting said differential bearing preload subsequent to the step of determining that said differential bearings are not properly preloaded.

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Claim 17 (previously presented): The method for assembling said drive axle assembly as defined in claim 10, wherein said support beam member of said drive axle assembly further includes two opposite arm sections extending from said central section.

Claim 18 (previously presented): The method for assembling said drive axle assembly as defined in claim 17, wherein said central section of said support beam member is enlarged relative to said arm sections.

Claim 19 (currently amended): The method for assembling said drive axle assembly as defined in claim 10, wherein said flat central section of said support beam member defines a support plane that is substantially orthogonal to a driving direction of said motor vehicle.

Claim 20 (currently amended): The method for assembling said drive axle assembly as defined in claim 10, wherein said axle support beam member has two pairs of said mounting studs outwardly extending from said central section of said axle support beam member, and wherein each of said bearing hub portions of said differential carrier frame member has ~~having~~ one pair of said mounting bores.